

PATENT SPECIFICATION

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DRAWINGS ATTACHED

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(54) PACKAGING MACHINES

(71) We, CAMPBELL TAGGART ASSOCIATED BAKERIES, INC., a corporation organised under the Laws of the State of Texas, United States of America, of 6211 5 Lemmon Avenue, Dallas, State of Texas, United States of America, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates in general to the packaging of articles, and more particularly to the packaging of buns and other bakery products in sealed packages made of plastics film. This invention provides a packaging machine for packaging articles with plastics film, comprising guide means disposed to guide two separate sheets of plastics film for movement longitudinally into close superposed proximity; upper and lower gripping means disposed for repeated movement from respective retracted positions to confronting positions of pressure contact with the sheets of film therebetween, said upper and lower gripping means, when in said confronting positions, cooperating to form a seal bonding said sheets together along a transversely extending strip defining the boundary between adjacently-formed packages; conveyor means operable to forcibly move articles to be packaged between said sheets and against the transversely extending seal strip to draw said sheets over the articles and thereby package same between successive transverse seal strips formed by the upper and lower gripping means, said conveyor means including a conveyor for transporting the articles and pusher means for pushing the articles against the seal strip; a transverse cutting member operable selectively to sever said sheets along the transverse seal strips to thereby separate adjacently-formed packages;

laterally spaced seal forming means operable to engage said sheets and progressively form seals bonding said sheets together along a plurality of longitudinally extending strips defining respective boundaries of the article packages.

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The invention further contemplates a machine wherein groups of buns or other like bakery products are forcibly pushed against interconnected sheets of polyethylene film thereby causing the films to unwind from rolls spaced above and below the machine, with reciprocating sealer bars arranged to come into contact with the film to seal same transversely as packages are moved on to a conveyor, a cutting heater element to sever the sealed surfaces to separate the packages at desired intervals, knurled sealing wheels arranged to rotate in pressure relationship against the film along the edge of the packages to seal same, a knurled wheel arranged to roll longitudinally in pressure contact with the film between groups of buns or other bakery products, alternately means for perforating or scoring the sealed surface between groups of buns as they move along the conveyor to permit the groups of buns to be divided into separate packages by the purchaser if desired, and means to score one side of the film to permit the separate packages to be more easily opened.

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[Price 25p]

5 All of the foregoing operations are carried out in a continuous sequence of operation to thereby provide a sealed package for groups of buns or other like articles, which package is compact, simple and easy to store and transport, allows quick and easy access thereto by the user of the packaged articles, preserves the integrity and freshness of the packaged articles, and provides advantages 10 and uses not heretofore possible in packaging equipment heretofore employed.

15 Articles with varying dimensions may be packaged. Varying numbers of articles may be enclosed in connected but separately sealed packages which may be later disjoined; and various numbers of connected packages may be included in a connected total package. The flexibility and speed of this machine is a matter of great importance. In addition 20 to the flexibility of adjustment heretofore mentioned it may package up to seventy-five (75) packages per minute.

25 It will be understood that the apparatus herein described can be employed for packaging buns or other bakery products, and it could also be used for packaging other types of articles which are of substantially uniform size and shape.

30 It is therefore an object of the invention to provide a packaging apparatus wherein the packaging film is withdrawn from supply rolls by the forcible movement of buns or like articles against the film.

35 A still further object of the invention is the provision of a bun packaging apparatus wherein successive groups of buns are forced against the sheets of packaging film to provide separate packages which are successively sealed therebetween, at the ends, cut into 40 separate packages, and selectively perforated therebetween or edges left free for tying.

45 Another object of the invention is to provide a package for buns or other like products which is divided into two separate sealed package units with score lines traversing each unit to permit ease in opening.

50 Still another object of the invention is to provide a package for buns or other like products wherein two separate sealed packages are joined together by a perforated line whereby the two packages may be handled as a unit but may be separated by the purchaser for separate opening, and wherein the edges may be selectively tied or 55 sealed.

60 Other and further objects of the invention will become apparent upon reading the detailed specification hereinafter following and by referring to the drawings annexed hereto.

65 An embodiment of the invention is shown in the attached drawings wherein,

Figures 1 and 1-A are semi-diagrammatic, side elevational views of the packaging machine according to the invention which in

operation moves groups of buns into engagement with sheets of packaging film.

70 Figure II is a side elevational view of a mechanism for operating upper and lower gripping means that perform transverse sealing of the packaging films.

75 Figure III is a cross sectional elevational view of the upper and lower gripping means and associated sealing bars which are brought into engagement with packaging film therebetween.

80 Figure IV is a side elevational view of the upper and lower gripping means showing the packaging film engaging bars with the sealing bar in engagement with the layers of packaging film and showing mechanism for selectively raising and lowering a cutting ribbon, said cutting ribbon being shown moved out of engagement with the packaging film by such mechanism.

85 Figure V is a side elevational view, similar to Figure IV, showing the cutting ribbon moved into engagement with the packaging film to sever same.

90 Figure VI is a side elevational view of the packaging material engaging bars with the edges of the packaging material engaged therebetween after such edges have been sealed by the sealing bar and severed by the cutting ribbon.

95 Figure VII is a top plan view of the mechanism for conveying and sealing between packages and along the edges thereof, means for trimming excess package material from the edges of the packages, and means for scoring or perforating longitudinally between the packages to permit same to be separated after packaging.

100 Figure VIII is a top perspective view of one form of package formed by this method and device.

105 Figure IX is a top perspective view of the package shown in Figure VIII illustrating the packaging film of one of the packages being torn away along the score line provided thereon to expose the buns therein.

110 Figure X is a top perspective view of another form of package which may be formed by the apparatus herein described wherein the ends of a double package are tied by 115 securing member, and a perforation is provided centrally thereof along the seal area to permit the packages to be separated intact, and

120 Figure IX shows two separate packages of Figure X after they have been separated by severing along the score line provided between the packages.

125 Referring first to Figure I, the numeral 1 indicates a conveyor belt disposed about rollers 2 on which group of buns 3 are deposited.

130 The groups of buns 3 are engaged by vertical engaging surfaces 5 of rotatable push arms 4. The push arms 4 are pivotally at-

tached by pivot connections 7 to an endless chain 6 which passes on sprocket 6a, said sprocket 6a being mounted on a suitable axle 6b. As the pusharms 4 are carried by 5 the chain 6 to the lowermost position shown in Figure 1 the engaging surfaces 5 slide along the conveyer 1 behind successive groups of buns 3 and push the buns together and deposit them on receiving plate 17. The 10 group of buns 3 is pushed forcibly by the arms 4 between the upper and lower films 11, 11a, of the packaging material to cause movement of the films 11 and 11a and withdrawal of same from storage rollers (not 15 shown) about which they are wound.

The packaging films 11 and 11a are preferably plastics films such as polyethylene, polypropylene, and others, and are preferably transparent but may be opaque, are 20 relatively thin but strong, and may be sealed together by application of heat and/or pressure as will be hereinafter described.

The upper film 11 is passed over a guide roller 10 against which there may be a pair 25 of spaced scoring rollers 8 rolling in pressure engagement therewith, said scoring roller 8 having scoring teeth 9 thereon which provide spaced score lines 85 shown in Figure III along the film 11 for the purposes 30 hereinafter described.

The film 11 is passed between rotatable guide rollers 12 and 13, and film 11a is passed between spaced guide rollers 14 and 15.

35 The films 11 and 11a are engaged by and forcibly pushed by the group of buns 3 to a position where the films are brought together between a reciprocating upper sealing bar 18 and lower holding bar 20.

40 The upper sealing bar 18 has a channel 18b provided along the lower side thereof which divides the same into two legs each having knurled surfaces, sometimes called "multi-points", 18a along the lower sides 45 thereof.

The lower sealing bar 20 has a channel 20a along the upper surface thereof providing legs having a spacer block 21a thereon, on which are mounted back-up members 21.

50 A cutting ribbon 19 which is heated to a red-hot temperature is recessed in the channel 18b and is arranged to move upwardly and downwardly therein in the manner hereinafter described.

55 The upper sealing bar is heated by a resistance heating element 51 embedded therein as shown in Figure III.

The upper sealing bar 18 and lower sealing bar 20 may be brought together to engage 60 the films 11 and 11a in pressure relationship therebetween so that the knurled surfaces 18a will penetrate the layers of film and weld same together at 22 by reason of the knurled surfaces 18a, and the heat generated in the upper sealing bar 18. The cutting ribbon 19 may then be brought into engagement with the sealed surfaces to sever, and separate the packages, as hereinafter described, and as indicated at 23. It will be noted that a sealed edge 22a is left along the severed edges of the film sheets 11 and 11a so that another group of buns 3 may be pushed into engagement therewith to withdraw further film from the storage rolls. The sealing and cutting procedure may be so timed that two packages may be left joined together as shown in Figure I, or each package may be severed from the other. 70

The packages 24 are deposited on a second conveyor having a plurality of transversely spaced belts 25 rotatable about rollers 26, and are guided thereto by guide rollers 27 and 28. 75

It will be noted from Figure VII that two groups of four buns are provided in each package but it will be understood that the number of buns per package and the number of groups in a total package can be varied. 80

A pressure seal is also provided longitudinally of the area between the groups of buns in each package as will be hereinafter described. 85

A belt 29 is rotatable about sheaves 30, 31, 32 and 33, said belt 29 being substantially the width of the spaced area between the groups of buns in each package and being arranged to extend slightly above the conveyor belt 25 and in the space therebetween so as to engage and press against the under surfaces of the packages along the spaced areas therebetween. 90

A seal wheel 34, having a knurled outer surface 35 thereon (Figure VII), rotatably engages the packaging material and is in pressure engagement therewith by reason of the pressure belt 29 pressing same thereagainst. The knurled surface 35 thus penetrates the packaging film, presses it together in adhering and sealing relationship, providing a center seal generally indicated by the numeral 84. 95

A center scoring wheel 36, (Figure I and VII), having cutting teeth 37 thereon is rotatably mounted on a pivotal arm 38 which may be moved into or out of engagement with the area between the groups of buns in the packages so that a score line 90 (Figure X) may be provided thereon to permit the separate groups of buns to be separated into separate sealed packages, after packaging, if desired. If it is not desired to provide such a score line between the groups of buns in the packages the scoring wheel 36 may be pivoted upwardly out of engagement with the film. 105

Belts 39 (Figures VII and I-A) are provided above and below the outer edges of the packaging film and are rotatable on rollers 40 and 41 and pass in the spaces be- 110

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5 between belts 25. The outer edges of the packaging film are grippingly engaged between and by the pressure exerted by belts 39 to hold them in alignment while the edges are being sealed and trimmed, as hereinafter described. 70

10 Edge sealing wheels 42 (Figures VII and I-A) have knurled surfaces 42a on the outer periphery thereof, and the packaging films 11 and 11a are arranged to run between the sealing wheels 42 and back-up wheels 43 to thereby cause the knurled surfaces 42a to penetrate the layers of film and provide a seal therebetween. 75

15 Inner belts 44 (Figures VII and I-A) are rotatable about rollers 45 and 46 and pass in spaces between belts 25, and the packaging films 11 and 11a pass between the belts 44 in pressure relationship inwardly of the sealing wheels 42 so as to take the slack out of the sealing material between the sealing wheels to provide a compact and tight package. 80

20 Guide plates 40a engage the buns 3 and move them inwardly of the sealing wheels 42. 85

25 The excess packaging material on the outer edges of the packages, externally of the edge sealing surfaces 42a of the wheels 42, is trimmed off by cutting ribbons 47 which are red hot and engage the plastics film as it moves thereagainst and severs same to provide severed edge portions 48. The severed edge portions 48 are guided into suction tubes 49 and drawn off by suction to suitable disposal areas. 90

30 An upper holding bar 50 (Figures III-VI) extends transversely over the machine and is in alignment with the lower sealing bar 20. The upper holding bar has a channel 50c formed along the lower face thereof providing spaced parallel holding jaws 50a and 50b. 95

35 The upper sealing bar 18 is suspended in the channel 50c by means of stems 52 extending through passages provided in the upper end of the channel and extend upwardly through a channel 50d provided along the upper side of bar 50. Springs 53 are disposed about stems 52 between the lower wall of the channel 50d and flanges 52a provided on the upper ends of the stems 52. Thus the sealing bar 18 may move vertically with reference to the holding bar 50 against the spring 53, and the spring 53 urges the stem 52 upwardly and the sealing bar 18 against the upper wall of the channel 50c. 100

40 It will be seen from Figure III that the holding bar 50 may be moved downwardly to clamp the sheets of packaging material 11 and 11a between the holding jaws 50a and 50b and the resilient back-up 21 on the upper surface of the lower sealing bar 20. While so held the upper sealing bar 18 is brought downwardly to cause the knurled 105

45 surfaces 18a on the lower side thereof to contact and penetrate the material of the plastic film sheets 11 and 11a, and the heat present in the sealing bar 18 generated by the heater element 51, seals the sheets of material 11 and 11a together. 110

50 It will be understood that a suitable mechanism is provided for intermittently bringing the upper holding bar 50 downwardly and the lower sealing bar 20 upwardly to engage the packaging material therebetween and so to intermittently bring the upper sealing bar 18 downwardly into contact with said material to seal same together. 115

55 Such mechanism is illustrated in Figure II wherein is shown an air cylinder 54 having a supply line 54a and return line 54b in communication therewith, and cylinder 54 has a piston therein which may be moved by air pressure to cause the piston rod 57 to move inwardly and outwardly thereof. 120

60 The air cylinder is pivotally mounted at 55 to a base member 56, which may be a part of the frame of the machine. 125

65 A link 58 is pivotally attached at 59a to the outer end of the piston rod 57 and is pivotally attached at 59 to a frame member 59b. A link 60 is attached by movable pivot 61 to the outer end of the link 58 and is pivotally attached at 60a to one end of a link 62. The link 62 is pivotally secured by pivot 63 to a frame member 63a and the other end of link 62 is pivotally attached by pivot 65a to a link 65 which in turn is attached by pivot 65b to and between spaced ears 64 extending from the holding bar 50. Sealing bar 18 is suspended from holding bar 50. 130

70 A link 66 is pivotally attached to link 58 and is pivotally attached at 68 by a movable pivot to one end of the link 67. 135

75 Link 67 is pivotally attached to a fixed frame member 69a by a pivot 69 and is pivotally attached at its other end by pivot 71 to an arm 70. The arm 70 is pivotally attached to the under side of the sealing bar 140

80 20 by a pivot 70a. 145

85 It will be understood that the mechanism hereinbefore described is duplicated at each end of the holder bar seal bar assembly and operates in unison. 150

90 It will be seen that when the air cylinder 54 is actuated to move the piston rod 57 outwardly the links 58, 60 and 66 assume the position shown in broken lines in Figure II. Such movement moves the outer end 155 of the link 62 downwardly and the outer end of link 67 upwardly thereby moving the jaws 50a and 50b of the upper holding bar 50 downwardly and the lower sealing bar 20 upwardly to engage the clamps and sheets of film 11 and 11a together therebetween as shown in Figure III. Further movement of the linkage assembly causes further downward movement of the outer end of the link 62 to thereby move the upper sealing bar 160

18 downwardly to cause the knurled surfaces on the lower edges thereof to engage and penetrate the packaging material sheets and seal them together by heat emanating 5 from the upper sealing bar 18.

Likewise, reverse movement of the piston and the air cylinder 54 to withdraw the piston rod 57 thereinto moves the linkages to original position as shown in full lines in 10 Figure II, thereby separating the heads and place them in position to carry out another sealing operation, as hereinbefore described. Such operation may of course be carried out in timed sequence by conventional time delay and stepping circuits, not necessary to illustrate in connection with this invention.

A cam plate 72 (Figure IV) is pivotally attached to a frame member 74 by a pivot 73.

The cam plate 72 has a curved follower surface 75 thereon which is arranged to contact the cutting ribbon 19 to raise and lower same in the manner hereinafter described.

A solenoid 76 is mounted on the frame member 74 and has an extendable core 77 therein, which is connected by a link 78 to the cam plate 72.

A spring 79 is secured at one end to the frame member 74, and is attached at its other end to the cam plate 72. The spring 30 79 is arranged to urge the cam plate 72 to the right as shown in Figure IV.

An arm 81 is secured at one end to the cutting ribbon 19 and is pivotally secured at its opposite end to a frame member 81a.

35 A spring 80 is attached to the frame member 74 and is attached at its other end to arm 81. The spring 80 is arranged to urge the cutting ribbon 19 into contact with the curved surface 75 of the cam plate 72. It 40 will be understood that the cam, solenoid and spring arrangement heretofore described for raising and lowering the cutting ribbon 19 into and out of engagement with the layers of film clamped between the holding bars 45 50 and 20 are duplicated at opposite ends of the machine so that both ends of the cutting ribbon 19 will be actuated simultaneously.

As shown in Figure IV the solenoid 76 is energized to draw the core 77 thereinto, 50 thereby moving the plate 72 to the left about the pivot point 73. In this position the curved surface 75 on the cam plate 72 has moved the cutting ribbon 19 upwardly out of contact with the films 11 and 11a. In timed sequence, by suitable automatic switching arrangement the solenoid 76 is de-energized, 55 which allows the spring 79 to contract and thereby move the cam plate 72 to its initial position about the pivot point 73. This permits the curved cam surface 75 to move to the right thereby allowing the cutting ribbon 19 to be lowered by reason of the force of the contraction of the spring 80. The cutting ribbon 19 is thus moved to position 60 shown in Figure V where the heat thereof 65

burns and severs the layers of plastic film 11 and 11a and thereby severs the connection between the packages 24 of buns as illustrated in Figure I.

The solenoid 76 is then again energized, 70 withdrawing the core 77 thereinto, thereby causing the curved surface 75 of the cam plate 72 to move the cutting ribbon 19 upwardly out of contact with the film as shown in Figure VI.

The energization and de-energization of the solenoid 76 may be so timed as to cause the cutting ribbon 19 to be lowered between each package 24 or it may be timed by a conventional adjustable timing switch, 80 relay or other control to allow two or more packages to pass thereunder without being severed and separated. Thus, the number of joined packages may be varied as desired.

Unique packages of buns or other uniformly shaped articles formed by the machine and process hereinbefore described are 85 illustrated in Figures VIII-XI inclusive.

As hereinbefore described the individual packages 24, as shown in Figures VIII and 90 IX, are sealed at opposite ends 83 by the heated multi-points 18a coming into pressure contact therewith as the wrapping film passes between the pressure heads 50 and 20 which are brought into engagement therewith, and the multi-points are lowered into pressure engagement therewith. The individual packages are severed at the sealed ends by the cutting ribbon 19 lowered between the multi-points 18a, thereby leaving sealed transverse 95 strips 83.

The longitudinal seal strip or line 84 is continuously formed by the knurled surface 35 of the sealing wheel 34 rolling in pressure contact with the wrapping film and 100 pressing same into sealing adhering relationship as it passes along the conveyor 25 and is backed by belt 29 passing over sheave 32. The sealed edges 82 are formed by the knurled surfaces 42a on the sealing wheels 110 42 rolling in pressure contact with the free edges of the packaging film as it is moved along the conveyor 25, and is held in engaging relationship between the outside pressure belts 39 and the inside pressure belts 115 44.

The scored lines 85 are formed in the upper layer of film 11 by the spaced scoring rollers 8 and 9 as the film is withdrawn from a storage roller (not shown).

Thus when the package 24 comes off the conveyor 25 a sealed package as shown in Figure VIII is provided having score lines 120 85 formed on either side of the center seal strip 84.

Thus a package is provided having two distinct sealed areas having a preselected number of buns or other uniformly shaped articles therein. An individual sealed area of the double package may be selectively 130

opened without opening the other sealed area and exposing the buns or other articles therein. Thus as shown in Fig. IX the upper layer of film may be easily torn along one of the score lines 85 and pulled open to form a flap 86 thereby exposing the buns 3 therein. The other section of the package may be left intact to maintain the buns therein in fresh state until there is a desire to use, same thereby preventing molding and wastage. The package shown in Figures VIII and IX is also convenient to use in commercial establishments where hamburgers are made, because the user can quickly open both sections of the package for exposure of the buns therein by simply inserting the fingers along the score line and pulling the flaps 86 outward in opposite directions for either use of the buns from the package or for emptying same into another container for immediate use.

A modified type of package may be formed by this machine and process as shown in Figures X and XI. In this package, indicated generally at 87, end seal lines 88 are formed by the heated multi-points 18a in the manner hereinbefore described, and a longitudinal seal line 89 is formed by the pressure wheel 34 as the package progresses along the conveyor 25. As shown, a tear, score or perforation line 90 has been formed across the seal area 89 by lowering the center perforator wheel 36 thereagainst so that the teeth 37 thereon penetrate the packaging material to provide such perforation.

Of course, the perforator wheel 36 could be lowered to provide a perforation line across the center seal line 84 in the form of package shown in Figures VIII and IX.

In forming the package shown in Figures X and XI, the edge sealing wheels 42 have been raised out of engagement with the wrapping film so that the edges 91 are free after excess wrapping film has been trimmed from the edges thereof by the cutting ribbons 47 at each side thereto. The free edges 91 are tied together and sealed by paper covered tie-wires 92, either by hand or by automatic machine. An automatic machine is provided for this purpose at the end of the conveyor 25, and is a conventional construction.

As it comes off the conveyor 25, the packages 87 is in the form shown in Figure X with two separate sealed areas having buns 3 therein. The package 87 may be folded along the perforation line 90 to provide a compact package for handling and storing on the grocery shelf. The purchaser may open a selected sealed area by removing the wire 92 and using the buns therefrom, leaving the other area closed and sealed, or the separate areas may be torn apart along the perforation line 90 to provide two separate packages as shown in Figure XI. One of

the packages may be stored or frozen in sealed condition and the other package used.

Of course, various numbers of buns may be packaged in the separate compartments shown in the packages of Figures VIII-IX 70 and X-XI.

The operation of the machine and method hereinbefore described is as follows:

The operation is started by sealing the free edges of the film 11 and 11a by transversely bringing the sealing bar 18 into contact therewith against the elastic back-up facing 21 on the sealing bar 20. The pusher arms 4 successively push groups of buns 3 between the sealed edges of the films 11 and 11a and unwind the film as the guide rollers 27 and 28 move the packages 24 onto the conveyor 25. The operative sequence of the holding head 50 and sealer bar 18 as hereinbefore described is such that the sealing bar 18 and the lower support bar 20 engage the packaging films 11 and 11a therebetween as the package 24 is moved upon the conveyor and the cutting ribbon 19 is brought into engagement with the film after sealing to sever same. As hereinbefore explained each individual package 24 is sealed therebetween, but the lowering of the cutting ribbon into severing engagement with the sealed surfaces may be timed so as to sever same between any selected number of joined packages. This operation is carried on successively in timed sequence so that a continuous flow of packaged buns or other articles are moved off the conveyor 25.

As hereinbefore described, as the packages 24 move along the conveyor the individual sections thereof are sealed by the sealing wheel 34 rotating in pressure contact therewith and the edges may be sealed by the edge of the sealing wheels 42 rolling in pressure contact therewith. The tear lines 85 may be formed along the upper sealing film 11 by the scoring wheels 8 and 9, and a longitudinal perforation line 90 may be formed along the sealed area 89 by the perforator wheel 36 so as to provide either the package shown in Figures VIII-IX or X-XI.

WHAT WE CLAIM IS:—

1. A packaging machine for packaging articles with plastic film, comprising guide means disposed to guide two separate sheets of plastic film for movement longitudinally into close superposed proximity; upper and lower gripping means disposed for repeated movement from respective retracted positions to confronting positions of pressure contact with the sheets of film therebetween, said upper and lower gripping means, when in said confronting positions, cooperating to form a seal bonding said sheets together along a transversely extending strip defining the boundary between adjacent-formed packages; conveyor means operable to forc- 130

ibly move articles to be packaged between said sheets and against the transversely extending seal strip to draw said sheets over the articles and thereby package same between 5 successive transverse seal strips formed by the upper and lower gripping means, said conveyor means including a conveyor for transporting the articles and pusher means for pushing the articles against the seal strip; a transverse cutting member operable 10 selectively to sever said sheets along the transverse seal strips to thereby separate adjacently-formed packages; laterally spaced seal forming means operable to engage said 15 sheets and progressively form seals bonding said sheets together along a plurality of longitudinally extending strips defining respective boundaries of the article packages.

2. A packaging machine according to 20 claim 1 including spaced scoring means running in pressure contact with one of the sheets of film to provide spaced longitudinal score lines intermediate the edges of the film before the film reaches the gripping 25 means to facilitate tearing the film to separate segments of the film after a package is formed.

3. A packaging machine according to 30 claim 1, including means to vary the intervals of time between successive operation of the transverse cutting member relative to the time interval between formation of successive transverse seals.

4. A packaging machine according to 35 claim 1 including a second conveyor disposed to receive the articles as packaged between successive transverse seal strips and to convey said articles and transversely sealed sheets to said laterally spaced seal forming means.

5. A packaging machine according to 40 claim 1, including a second conveyor arranged to receive and convey the articles,

as packaged between the transversely sealed sheets, away from the upper and lower gripping means; and a central scoring member in rotative contact with one of the sheets of film to press same against the other sheet of film and seal same thereto as the package moves along the conveyor. 45

6. A packaging machine according to claim 5, including edge scoring members arranged to press the sheets of plastic film together in sealing engagement at the edges of the packages as they move along the 50 second conveyor.

7. A packaging machine according to claim 6, including means to grippingly engage the edges of the film in spaced relationship at each side of the package as the edge scoring members are brought into sealing contact therewith. 60

8. A packaging machine according to claim 5, including a perforating member arranged to run in pressure contact with the sealed area formed by the central scoring member to provide a perforated line therealong. 65

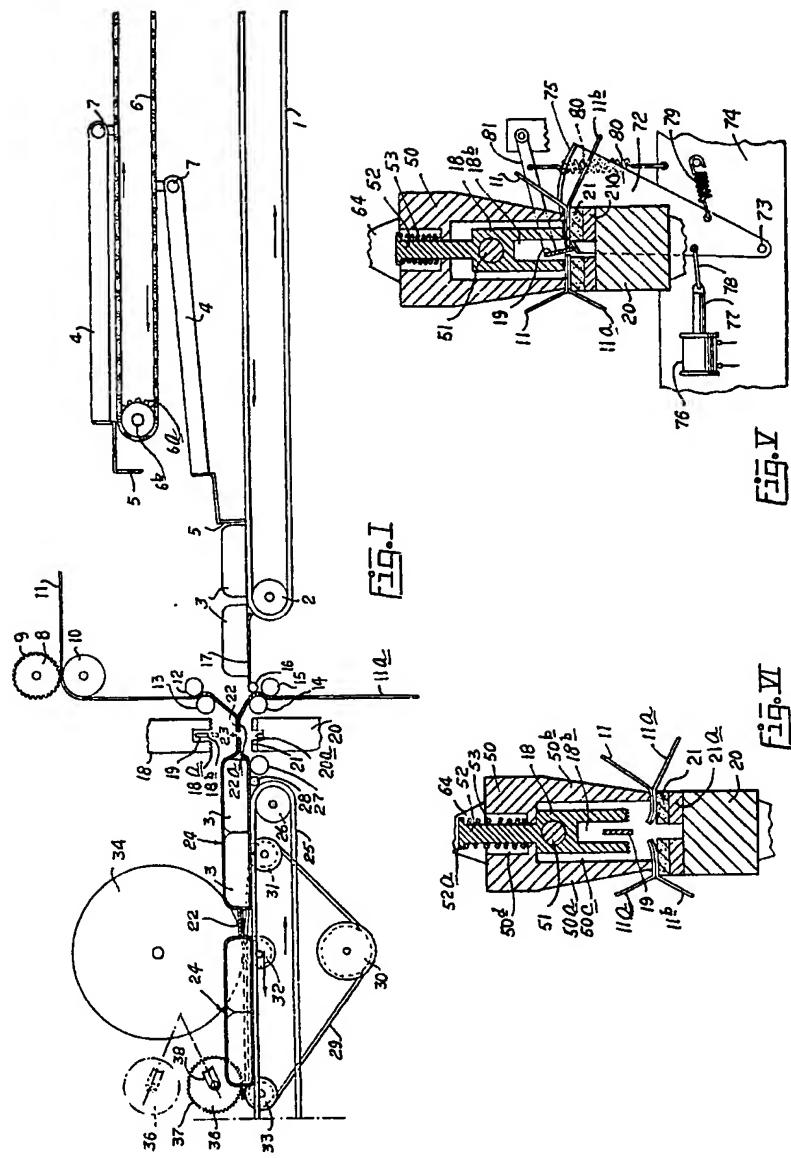
9. A packaging machine according to claim 7, including means to sever the sheets of plastic material along the edges of the package outwardly of the edge sealing members to trim excess film therefrom as it moves along the second conveyor. 70

10. A packaging machine according to claim 9, including suction means to receive and convey away the excess material trimmed from the edges of the plastic sheets. 75

11. A packaging machine as hereinbefore described and/or illustrated in the accompanying drawings. 80

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 Sheet 2

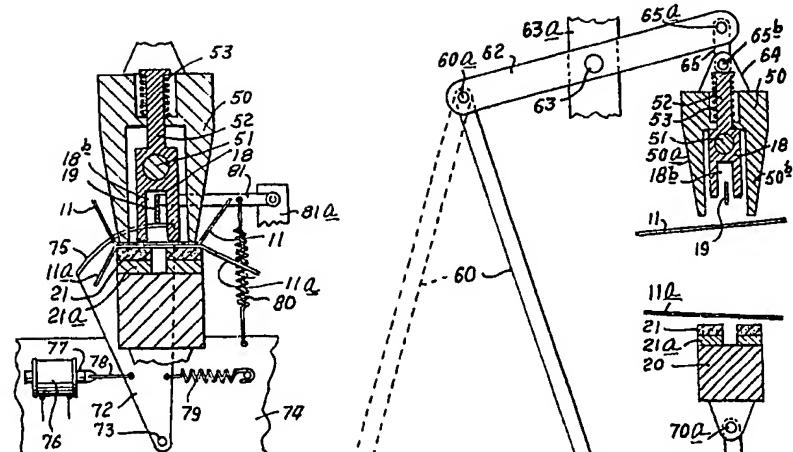


Fig. IV

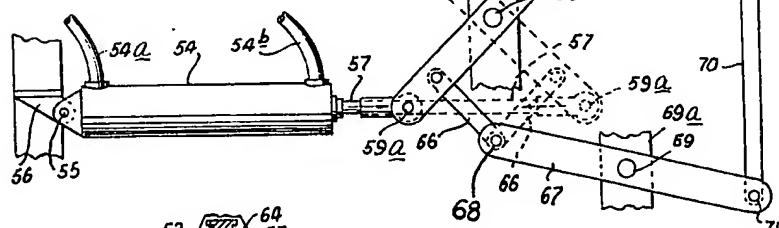


Fig. II

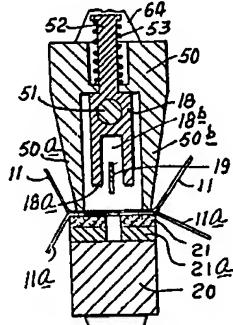


Fig. III

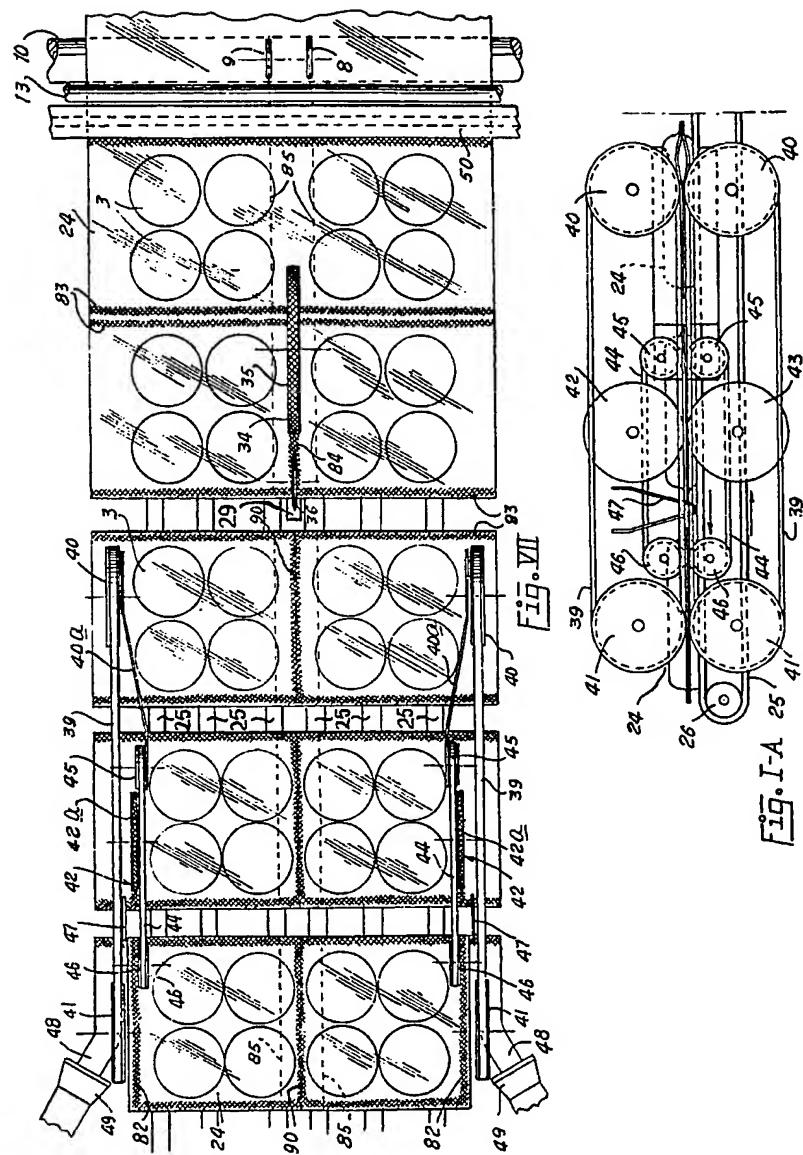
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COMPLETE SPECIFICATION

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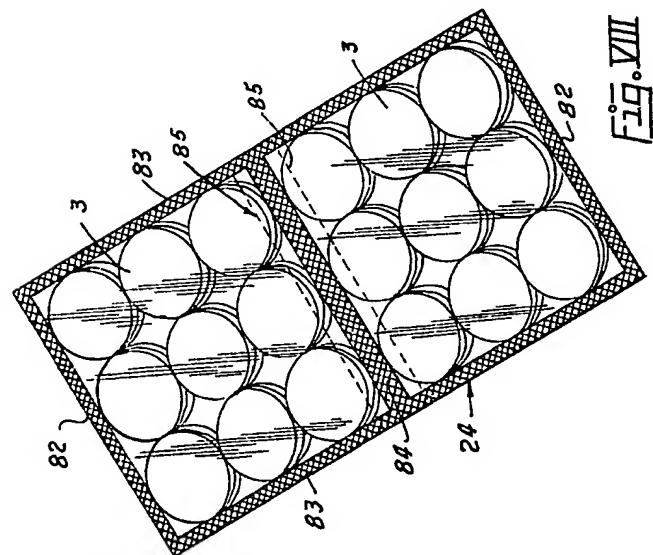
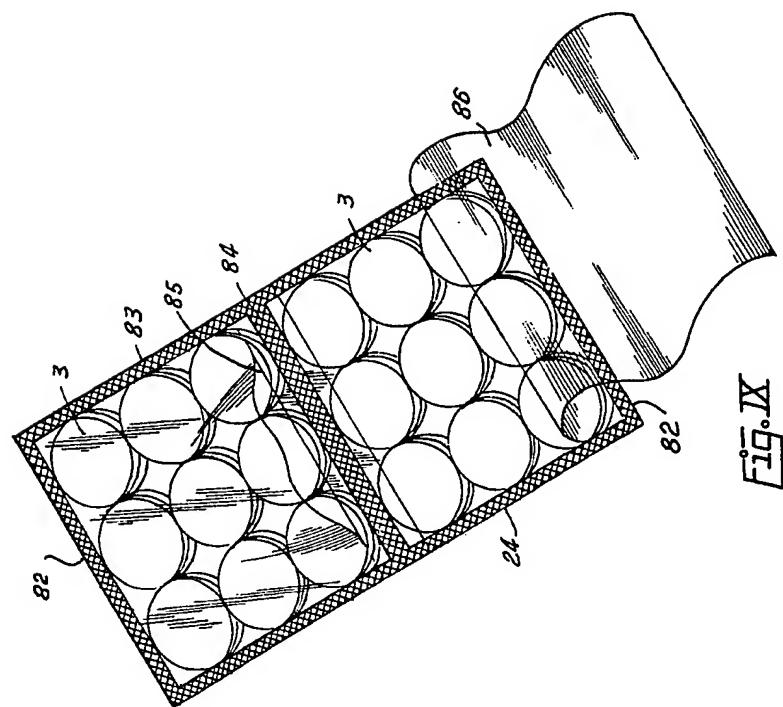
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